Remarks/Arguments

Claims 9, 12, 14-23, 25, and 36-40 are pending in the present application.

Rejection Under 35 U.S.C. § 103

Applicant respectfully requests reconsideration of the rejection of claims 9, 12, 14-23, 25, and 38-40 under 35 U.S.C. § 103(a) as being unpatentable over Applicants Admitted Prior Art ("*AAPA*") in view of *Uri* ("*Uri*") ("Workload management-many questions", IT Resource Forums, 7-10-2002, XP002290900, pp, 1-4, http://forums1.itrc.hp.com/service/forums/questionanswer.do?admit+716493758+1091180233157+28353475&threadID+25550), further in view of *Shuler, Jr.* ("*Shuler*") (US 4,912,629). As will be explained in more detail below, the cited references do not disclose each and every feature of independent claims 9, 16, and 38.

Applicant's independent claim 9 recites the following (emphasis added):

> A computer implemented method comprising:
>
> monitoring usage of a computing resource utilized by a workload wherein said monitoring is performed by a process within a user space and the process monitors the user space only, the workload includes a plurality of running processes, the plurality of running processes are a subset of all processes that are running in the user space;
>
> responsive to exceeding a limit on utilization of said computing resource, decreasing usage of said computing resource by said workload, said computing resource comprises physical memory and said decreasing usage of said computing resource comprises paging a portion of said physical memory assigned to said workload out of said physical memory and said decreasing usage does not halt operation of said workload.

Regarding claim 9, the Office admits that *AAPA* and *Uri* do not teach that "said decreasing usage does not halt operation of said workload." Nonetheless, the Office states that it would have been obvious to modify *AAPA* and *Uri* to teach that decreasing usage does not halt operation, as one would be motivated by the desire to increase the responsiveness of *AAPA* by continually executing the workload while performing memory paging, as taught by *Shuler*. However, as explained in further detail below, the teachings of the *Shuler* reference taken in combination with the *AAPA* and *Uri* references would not have rendered the claimed subject matter obvious to one of ordinary skill in the art.

Shuler teaches a real-time garbage collection method in which a reference counter is kept for each cell which keeps track of the number of pointers to that cell. When the counter becomes zero then the cell is returned to the free list. *Shuler,* Col. 3, lines 60-68. As such,

"all inaccessible cells are *immediately* identified and reclaimed; thus there is *never an unanticipated delay* when needing a free cell." *Shuler,* Col. 4, lines 11-13, (emphasis added). In other words, *Shuler* teaches a garbage collection mechanism wherein the identification and reclamation of cells is continuously performed on an ongoing basis. *Shuler* teaches that the "fixed and deterministic overhead of updating counters" is preferable to "unpredictable delays of all systems which do not immediately identify and reclaim inaccessible cells." *Shuler,* Col. 4, lines 13-17.

The *Shuler* reference does not relate to memory paging as claimed. Yet even so, if one were to attempt to apply the teachings of *Shuler* in an analogous manner to memory paging, the result would be a system which continuously performs memory paging on an ongoing basis, so that there is never an unanticipated delay when computing resources are needed. In line with *Shuler's* reasoning, the fixed overhead of continually paging would be preferable to unpredictable delays of systems which do not operate in such an immediate manner.

In contrast, Applicant's claim is directed to a system that decreases usage of a workload in a manner that is responsive to exceeding a limit on utilization of said computing resource. Therefore, unlike *Shuler's* technique, Applicant's claimed invention does not execute memory paging on a continual basis, but rather in response to exceeding a limit on resource utilization. In this manner, Applicant's claimed invention does not require a "fixed overhead" which would be detrimental to performance under normal conditions, but rather engages in memory paging on an as-needed basis when resource utilization exceeds a predetermined limit. In fact, *Shuler* does not actually relate to a decrease in usage as claimed, as *Shuler* teaches a fixed overhead which would neither increase nor decrease with reference to a predetermined limit.

Moreover, Applicant's claimed invention operates in a manner such that the decreasing usage does not halt operation of the workload. As admitted by the Office, this feature of Applicant's claimed invention is not disclosed by the cited prior art references. *AAPA* and *Uri* teach systems which would halt operation of the workload during paging. And the further application of *Shuler's* teachings would only result in a system which does not actually decrease usage, but rather implements a fixed overhead of continual paging.

In sum, Applicant respectfully submits that one skilled in the art would not have arrived at the claimed invention by combining the teachings of *Shuler* with those of *AAPA*

and *Uri*. For at least the above-mentioned reasons, it is submitted that independent claim 9 is patentable over the prior art of record. Independent claims 16 and 38 define subject matter analogous to that of claim 9, and are therefore believed to be patentable over the prior art for at least the same reasons as discussed above with regard to claim 9. Likewise, dependent claims 12, 14-15, 17-23, 25, and 39-40 depend from independent claims 9, 16, or 38, and are submitted to be patentable for at least the same reasons as their corresponding independent claims.

Claims 36 and 37 were rejected under 35. U.S.C. 103(a) as being unpatentable over *Tanenbaum* (Modern Operating Systems, 2nd Edition, 2001, Prentice Hall Intl, New Jersey) in view of *AAPA,* further in view of *Shuler*. The deficiencies of the *AAPA* and *Shuler* references have been discussed above. The *Tanenbaum* reference does not cure these deficiencies. As such, it is respectfully submitted that claim 36 is patentable over the cited prior art, as is claim 37, which depends from claim 36.

Conclusion

In conclusion, Applicant submits that the pending claims in the present application are patentable over the prior art of record. Therefore, withdrawal of the rejections, and passage of the claims to allowance is respectfully requested.

If the Examiner has any questions concerning the present application, the Examiner is kindly requested to contact the undersigned at (408) 774-6913. If any other fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No SUNMP453).

Respectfully submitted,
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